USER'S MANUAL

PMB-732LF

Intel® Core 2 Duo
ATX Motherboard
With VGA/Audio/2LAN

PMB-732LF M3

PMB-732LF Intel® Core 2 Duo
ATX Motherboard
With VGA/ Sound/ 2LAN

OPERATION MANUAL

COPYRIGHT NOTICE

This operation manual is meant to assist both Embedded Computer manufacturers and end users in installing and setting up the system. The information contained in this document is subject to change without any notice.

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CE NOTICE

This is a class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

FCC NOTICE

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

You are cautioned that any change or modifications to the equipment not expressly approve by the party responsible for compliance could void your authority to operate such equipment.

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CHAPTER

1

INTRODUCTION

This chapter gives you the information for PMB-732LF. It also outlines the System specifications.

Section includes:

- About This Manual
- System Specifications
- Safety Precautions

Experienced users can skip to chapter 2 on page 2-1 for a Quick Start.

1-1. ABOUT THIS MANUAL

Thank you for purchasing our PMB-732LF Intel® Core 2 Duo ATX Motherboard enhanced with VGA/Sound/2LAN, which is fully PC / AT compatible. The PMB-732LF provides faster processing speed, greater expandability and can handle more tasks than before. This manual is designed to assist you how to install and set up the system. It contains four chapters. The user can apply this manual for configuration according to the following chapters:

Chapter 1 Introduction

This chapter introduces you to the background of this manual, and the specifications for this system. The final page of this chapter will indicate how to avoid damaging this board.

Chapter 2 Hardware Configuration

This chapter outlines the component locations and their functions. In the end of this chapter, you will learn how to set jumper and how to configure this card to meet your own needs.

Chapter 3 Software Utilities

This chapter contains helpful information for proper installations of the VGA utility, LAN utility, Sound utility, and Flash BIOS Update. It also describes the Watchdog-timer configuration.

Chapter 4 Award BIOS Setup

This chapter indicates you how to set up the BIOS configurations.

Appendix A Expansion Bus

This Appendix introduces you the expansion bus for 4 x PCI BUS, 2 x PCI-E 4x BUS, 1 x PCI-E 16x Bus.

Appendix B Technical Summary

This section gives you the information about the Technical maps.

1-2. SYSTEM SPECIFICATIONS

- **CPU:**
  Intel® Penryn CPU / Sock478-pin socket on board
  Intel® Core™ 2 Duo processor
  Intel® Celeron® M.
  (Support Intel 45nm Penryn CPU)

- **CHIPSET:**
  Intel GM45 + ICH9M / ICH9M-E +SPI (FSB: 667/1066MHz)

- **MEMORY:**
  2×200Pin DDR2 SO-DIMM to support 667/800MHz.

- **BIOS:**
  Phoenix Award PnP BIOS with 32MB size flash, with VGA BIOS.

- **KEYBOARD CONNECTOR:**
  PS/2 Connector, with mini DIN connector on Rear Panel.

- **MOUSE CONNECTOR:**
  PS/2 Connector, with mini DIN connector on Rear Panel.

- **BUS SUPPORT:**
  4×PCI, 2×PCI-E 4x, 1×PCI-E 16x

- **DISPLAY:**
  Build-in GM45 Support VGA, LVDS, TV-out
  Support SDVO (ADD2 & ADD2+)
  Support PCI-E 16x (Graphics Card)

- **SATA INTERFACE:**
  4 ports S-ATA connector form ICH9M (support SATA DOM×1)

- **SERIAL PORT:**
  4 ports.
  COM1/3/4 for RS-232,COM2 for RS-232/422/485.
  COM 3/4 can output +5V or +12V, and use Jumper settings.

- **USB CONNECTOR:**
  Support up to ten USB 2.0 ports.

- **LAN ADAPTER:**
  Dual Ports to support 100/1000Mbps
  Lan1 : Intel 82567LM ×1 / Lan2 : Intel 82573V ×1
  Supports Wake-on-LAN

- **SOUND:**
  High Definition Audio；Realtek ALC888, support SPDIF

- **HARDWARE MONITORING FUNCTION:**
  SIO

- **IRDA PORT:**
  One IrDA Port；Support v1.0 SIR protocol.

- **PARALLEL PORT:**
  1 port, Bi-direction, SPP / EPP / ECP

- **LED INDICATOR:**
  HDD LED, power LED.

- **IO and OTHER:**
  LPC (Winbond W83627UHG)

- **RTC:**
  Build in South Bridge.

- **FDD:**
  One FDD connector with 34-pin Boxheader.

- **EXTENDABLE FUNCTION:**
  TPM.

- **DIGITAL I/O:**
  8in / 8out.

- **RAID FUNCTION:**
  Support Raid 0,1；Build in South Bridge(ICH9M-E only).

- **SPEAKER:**
  Internal buzzer.

- **WATCHDOG:**
  1~255 Sec

- **POWER SUPPLY:**
  Support ATX 24pin

- **DMA CONTROLLER:**
  82C37 x 2

- **DMA CHANNELS:**
  7

- **INTERRUPT CONTROLLERS:**
  82C59 x 2

- **INTERRUPT LEVELS:**
  15

- **TEMPERATURE:**
  Operation temperature 0°~60°C, Storage temperature -40°~85°C.

- **HUMIDITY:**
  Operation humidity 20~95%, Storage humidity 20~95%.

- **BOARD DIMENSIONS:**
  305mm x 244mm

- **BOARD NET WEIGHT:**
  630gram.

1-3. SAFETY PRECAUTIONS

Follow the messages below to avoid your systems from damage:

1. Keep your system away from static electricity on all occasions.

2. Prevent electric shock. Don‘t touch any components of this card when the card is power-on. Always disconnect power when the system is not in use.

3. Disconnect power when you change any hardware devices. For instance, when you connect a jumper or install any cards, a surge of power may damage the electronic components or the whole system.

HARDWARE CONFIGURATION

CHAPTER

2

*** QUICK START ***

Helpful information describes the jumper & connector settings, and component locations.

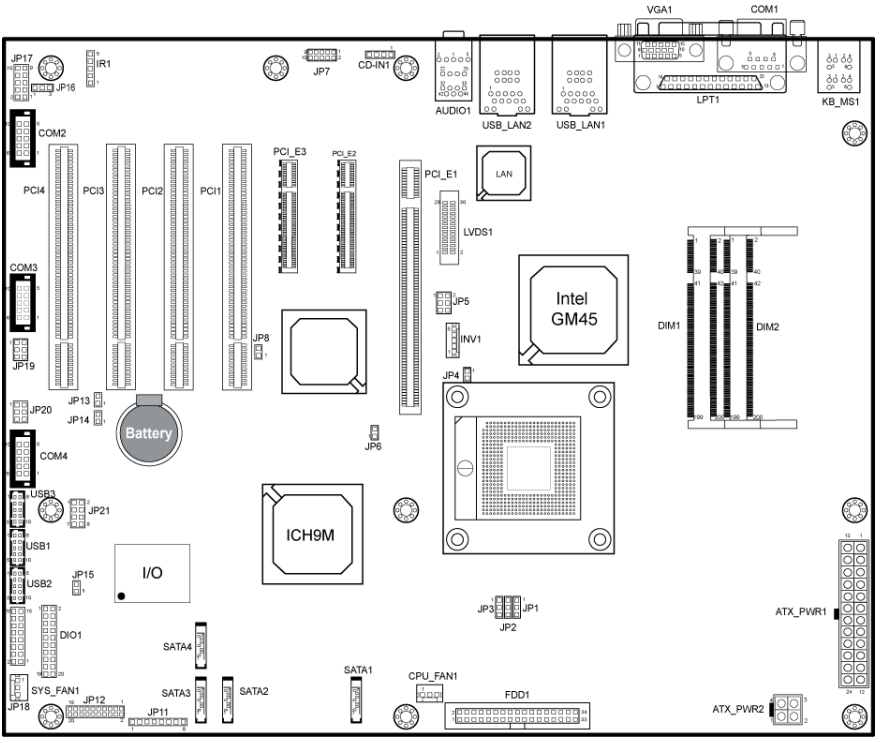
Section includes:

- Jumper & Connector Quick Reference Table
- Component Locations
- Configuration and Jumper settings
- Connector's Pin Assignments

2-1. JUMPER & CONNECTOR QUICK REFERENCE TABLE

COM Port Connector	COM1, COM2 COM3, COM4
COM3 Port RI/Voltage Selection	JP11
COM4 Port RI/Voltage Selection	JP12
RS232/422/485 (COM2) Selection	JP13
Keyboard/Mouse Connector	KB_MS1
Reset Connector	JP18 (5, 7)
Hard Disk Drive LED Connector	JP18 (1, 3)
ATX Power Button	JP18 (6, 8)
External Speaker Connector	JP18 (10, 12, 14, 16)
PLED Connector	JP18 (2, 4)
Sleep Button	JP18 (13, 15)
Clear CMOS Data Selection	JP13
CPU Fan Connector	CPU_FAN1
System Fan Connector	SYS_FAN1
TPM Connector	JP12
VGA Connector	VGA1
Serial ATA Connector	SATA1, SATA2, SATA3, SATA4
Floppy Disk Drive Connector	FDD1
Printer Connector	LPT1
Universal Serial Bus Connector	USB1, USB2, USB3
IrDA Connector	IR1
USB&LAN Connector	USB_LAN1, USB_LAN2
ATX Power Connector	ATX_PWR1, ATX_PWR2
Sound Connector	AUDIO1
CD Audio-In Connector	CD_IN1
Memory Installation	DIMM1, DIMM2
Reserved PIN	JP4, JP6, JP8, JP9, JP10, JP11, JP14, JP15, JP21

2-2. COMPONENT LOCATIONS



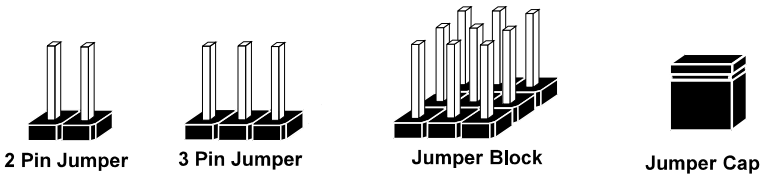
LB-732LF Connector, Jumper and Component locations

2-3. HOW TO SET THE JUMPERS

You can configure your board by setting jumpers. Jumper is consists of two or three metal pins with a plastic base mounted on the card, and by using a small plastic "cap", Also known as the jumper cap (with a metal contact inside), you are able to connect the pins. So you can set-up your hardware configuration by "open" or "close" pins.

The jumper can be combined into sets that called jumper blocks. When the jumpers are all in the block, you have to put them together to set up the hardware configuration. The figure below shows how this looks like.

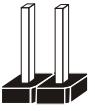
JUMPERS AND CAPS



If a jumper has three pins (for examples, labelled PIN1, PIN2, and PIN3), You can connect PIN1 & PIN2 to create one setting by shorting. You can either connect PIN2 & PIN3 to create another setting. The same jumper diagrams are applied all through this manual. The figure below shows what the manual diagrams look and what they represent.

JUMPER DIAGRAMS

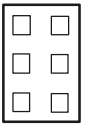
Jumper Cap looks like this



2 pin Jumper looks like this

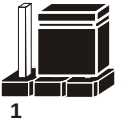
3 pin Jumper looks like this

Jumper Block looks like this

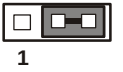


JUMPER SETTINGS

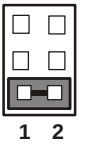
2 pin Jumper close(enabled) Looks like this



3 pin Jumper 2-3 pin close(enabled) Looks like this



Jumper Block 1-2 pin close(enabled) Looks like this



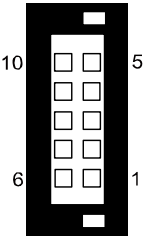
2-4. COM PORT CONNECTOR

COM1 : COM1 Connector
COM1 is fixed as RS-232.
The pin assignment is as follows :

PIN	ASSIGNMENT
1	COM1_DCD#
2	COM1_RX
3	COM1_TX
4	COM1_DTR#
5	GND
6	COM1_DSR#
7	COM1_RTS#
8	COM1_CTS#
9	COM1_RI#

COM2 : COM2 Connector
The COM2 is selectable as RS-232/422/485.
The pin assignment is as follows :

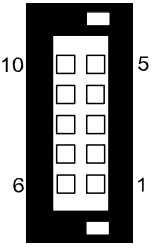
PIN	ASSIGNMENT		
	RS-232	RS-422	RS-485
1	COM2_DCD#	TX-	TX-
2	COM2_RX	TX+	TX+
3	COM2_TX	RX+	RX+
4	COM2_DTR#	RX-	RX-
5	GND	GND	GND
6	COM2_DSR#	RTS-	GND
7	COM2_RTS#	RTS+	GND
8	COM2_CTS#	CTS+	GND
9	COM2_RI#	CTS-	GND



COM2

COM3 : COM3 Connector
COM3 is fixed as RS-232.
The pin assignment is as follows :

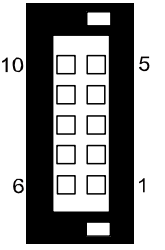
PIN	ASSIGNMENT
1	COM3_DCD#
2	COM3_RX
3	COM3_TX
4	COM3_DTR#
5	GND
6	COM3_DSR#
7	COM3_RTS#
8	COM3_CTS#
9	COM3_RI#



COM3

COM4 : COM4 Connector
COM4 is fixed as RS-232.
The pin assignment is as follows :

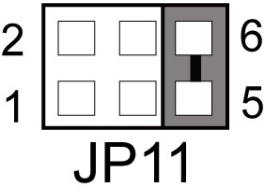
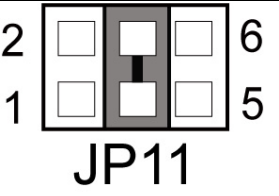
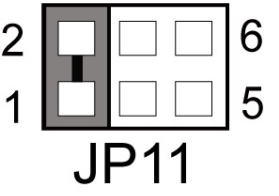
PIN	ASSIGNMENT
1	COM4_DCD#
2	COM4_RX
3	COM4_TX
4	COM4_DTR#
5	GND
6	COM4_DSR#
7	COM4_RTS#
8	COM4_CTS#
9	COM4_RI#



COM4

2-5. COM3 RI & VOLTAGE SELECTION

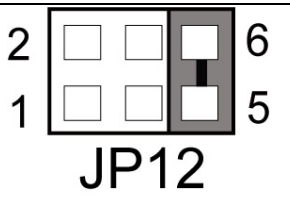
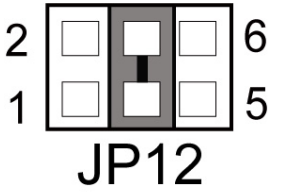
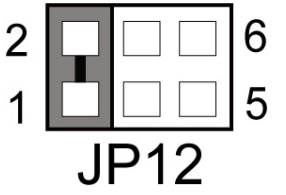
JP11 : COM3 RI & Voltage Selection
The selections are as follows:

SELECTION	JUMPER SETTINGS	JUMPER ILLUSTRATION
5V	5-6	
12V	3-4	
RI	1-2	

***Manufacturing Default -- RI.

2-6. COM4 RI & VOLTAGE SELECTION

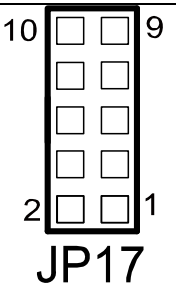
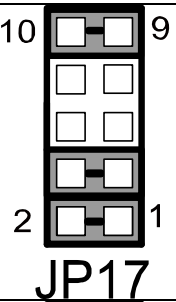
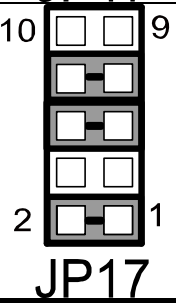
JP12 : COM4 RI & Voltage Selection
The selections are as follows:

SELECTION	JUMPER SETTINGS	JUMPER ILLUSTRATION
5V	5-6	
12V	3-4	
RI	1-2	

***Manufacturing Default -- RI.

2-7. RS232/422/485 (COM2) SELECTION

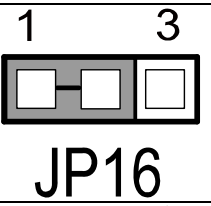
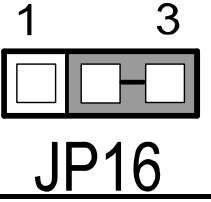
JP17 : RS-232/422/485 (COM2) Selection
This connector is used to set the COM2 function.
The jumper settings are as follows :

COM 2 Function	Jumper Settings (pin closed)	Jumper Illustrations
RS-232	All Open	
RS-422	1-2, 3-4, 9-10	
RS-485	1-2, 5-6, 7-8	

*** Manufacturing default -- RS-232.

2-8. COM2 AUTO DETECT SELECTION

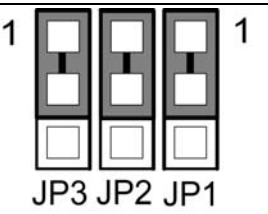
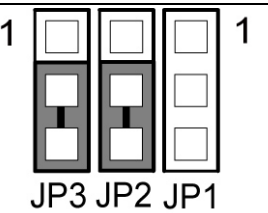
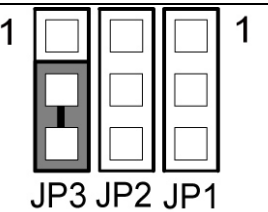
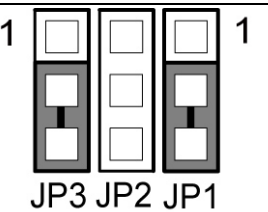
JP16 : COM2 Auto Detect selection
The selections are as follows:

SELECTION	JUMPER SETTINGS	JUMPER ILLUSTRATION
NORMAL	1-2	
AUTO GATING	3-4	

***Manufacturing Default – Normal.

2-9. FSB FREQUENCY SELECTION

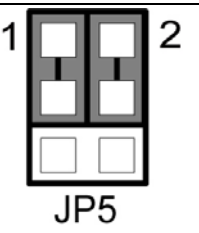
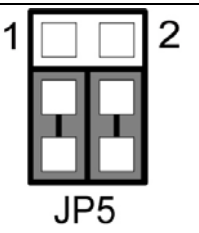
JP1, JP2, JP3 :FSB Frequency Selection
The selections are as follows:

FREQUENCY	JUMPER SETTINGS			JUMPER ILLUSTRATION
	JP1	JP2	JP3	
Auto	1-2	1-2	1-2	
1066MHz (266 MHz)	OPEN	2-3	2-3	
800MHz (200 MHz)	OPEN	OPEN	2-3	
667MHz (166 MHz)	2-3	OPEN	2-3	

***Manufacturing Default – Auto.

2-10. LVDS VOLTAGE SELECTION

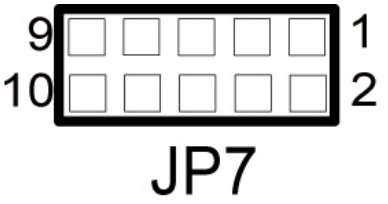
JP5 : LVDS voltage selection
The selections are as follows:

SELECTION	JUMPER SETTINGS	JUMPER ILLUSTRATION
3.3V	1-3, 2-4	
5V	3-5, 4-6	

***Manufacturing Default – 3.3V

2-11. TV OUT CONNECTOR

JP7 : TV Out Connector
The pin assignments are as follows :

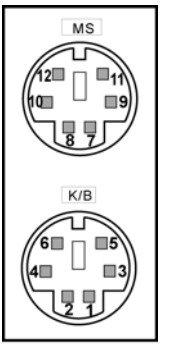


PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	DACB_L	2	DACA_L
3	GND	4	GND
5	DACC_L	6	NC
7	DLIN1	8	DLIN2
9	DLINE3	10	NC

2-12. KEYBOARD AND PS/2 MOUSE CONNECTOR

KB_MS1 : Keyboard and PS/2 Mouse Connector
The pin assignments are as follows :

PIN	ASSIGNMENT
1	KBDATA
2	NC
3	GND
4	VCC5
5	KBCLK
6	NC
7	MSDATA
8	NC
9	GND
10	VCC5
11	MSCLK
12	NC

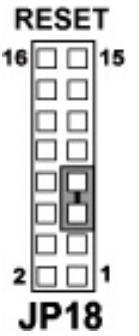


KB_MS1

2-13. RESET CONNECTOR

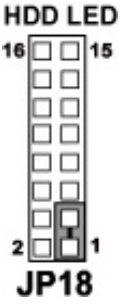
JP18 (5, 7) : Reset Connector.
The pin assignment is as follows :

PIN	ASSIGNMENT
5	GND
7	RST_BTN



JP18

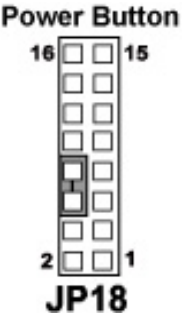
2-14. HARD DISK DRIVE LED CONNECTOR



JP18 (1, 3) : Hard Disk Drive LED Connector
The pin assignment is as follows :

PIN	ASSIGNMENT
1	HD_LED+
3	HD_LED-

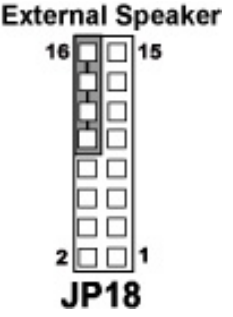
2-15. ATX POWER BUTTON



JP18 (6, 8) : ATX Power Button
The pin assignment is as follows :

PIN	ASSIGNMENT
6	PWRBTNSW
8	GND

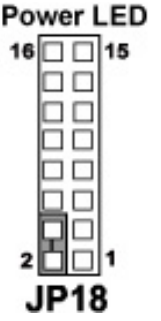
2-16. EXTERNAL SPEAKER CONNECTOR



JP18 (10, 12, 14, 16) : External Speaker Connector
The pin assignment is as follows :

PIN	ASSIGNMENT
10	SPK_VCC
12	SPEAKER SIGNAL
14	SPEAKER SIGNAL
16	SPEAKER SIGNAL

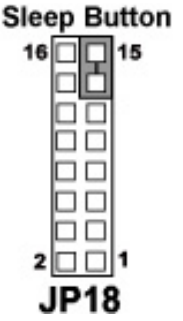
2-17. PLED CONNECTOR



JP18 (2, 4) : PLED Connector
The pin assignment is as follows:

PIN	ASSIGNMENT
2	PW_LED+
4	PW_LED-

2-18. SLEEP BUTTON CONNECTOR

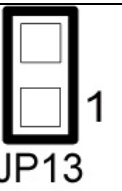
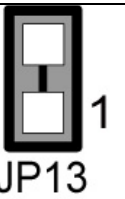


JP18 (13, 15) : Sleep Button Connector
The pin assignment is as follows:

PIN	ASSIGNMENT
13	SLP_BTN
15	GND

2-19. CLEAR CMOS DATA SELECTION

JP13 : Clear CMOS Data Selection
The selections are as follows :

FUNCTION	JUMPER SETTING (pin closed)	JUMPER ILLUSTRATION
Normal	Open	
Clear CMOS	Close	

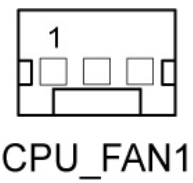
*** Manufacturing Default -- Normal.

Note: To clear CMOS data, user must power-off the computer and set the jumper to “Clear CMOS” as illustrated above. After five to six seconds, set the jumper back to “Normal” and power-on the computer.

2-20. CPU FAN CONNECTOR

CPU_FAN1 : CPU Fan connector
The pin assignment is as follows:

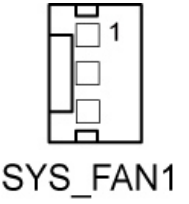
PIN	ASSIGNMENT
1	GND
2	VCC12
3	LPC1_FANIO1



2-21. SYSTEM FAN CONNECTOR

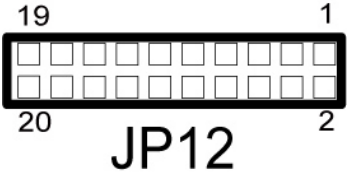
SYS_FAN1 : System Fan connector
The pin assignment is as follows:

PIN	ASSIGNMENT
1	GND
2	VCC12
3	LPC1_FANIO2



2-22. TPM CONNECTOR

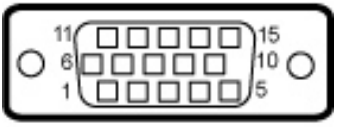
JP12 : TPM connector
The pin assignment is as follows:



PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	CLK	2	GND
3	FRAME	4	NC
5	RESET	6	VCC5
7	LAD3	8	LAD2
9	VCC3	10	LAD1
11	LAD0	12	GND
13	SMBCLK	14	SMBDATA
15	3VSB	16	SERIRQ
17	GND	18	CLK RUN
19	SUS_TAT	20	DREQ0

2-23. VGA CONNECTOR

VGA1: VGA Connector



VGA1

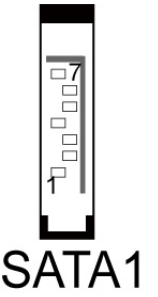
PIN	ASSIGNMENT
1	RED
2	GREEN
3	BLUE
4	NC
5	GND
6	GND
7	GND
8	GND
9	VCC
10	GND
11	NC
12	DATA
13	HSYNC
14	VSYNC
15	CLK

2-24. SERIAL ATA CONNECTOR

SATA1~SATA4: The PMB-732LF possesses four Serial ATA Connector, SATA1~SATA4. The pin assignments are as follows:

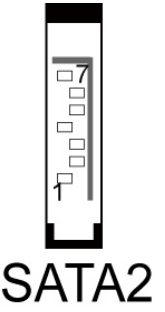
SATA1:

PIN	ASSIGNMENT
1	GND
2	SATA_TXPC0
3	SATA_TXNC0
4	GND
5	SATA_RXNC0
6	SATA_RXPC0
7	GND



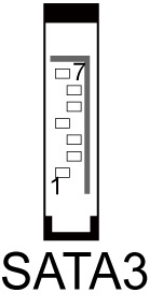
SATA2:

PIN	ASSIGNMENT
1	GND
2	SATA_TXPC1
3	SATA_TXNC1
4	GND
5	SATA_RXNC1
6	SATA_RXPC1
7	GND



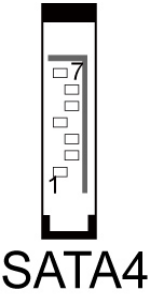
SATA3:

PIN	ASSIGNMENT
1	GND
2	SATA_TXPC2
3	SATA_TXNC2
4	GND
5	SATA_RXNC2
6	SATA_RXPC2
7	GND



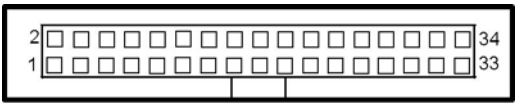
SATA4:

PIN	ASSIGNMENT
1	GND
2	SATA_TXPC3
3	SATA_TXNC3
4	GND
5	SATA_RXNC3
6	SATA_RXPC3
7	GND



2-25. FLOPPY DISK DRIVE CONNECTOR

FDD1 : Floppy Disk Drive Connector
You can use a 34-pin daisy-chain cable to connect two-FDDs. On one end of this cable is a 34-pin flat cable to attach the FDD on the board, and the other side is attaches two FDDs.
The pin assignments are as follows :

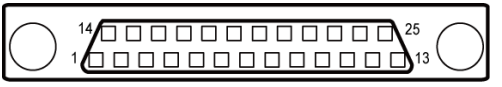


FDD1

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	GND	2	F_DENSEL#
3	GND	4	NC
5	GND	6	NC
7	GND	8	F_INDEX#
9	GND	10	F_MTRA#
11	GND	12	F_DRVB#
13	GND	14	F_DRVA#
15	GND	16	F_MTRB#
17	GND	18	F_DIR#
19	GND	20	F_STEP#
21	GND	22	F_WDATA#
23	GND	24	F_WGATE#
25	GND	26	F_TRK0#
27	GND	28	F_WPT#
29	GND	30	F_RDATA#
31	GND	32	F_HDSEL#
33	GND	34	F_DSKCHG#

2-26. PRINTER CONNECTOR

LPT1: Printer Connector
As to link the Printer to the card, you need a cable to connect both DB25 connector and parallel port.
The pin assignments are as follow :



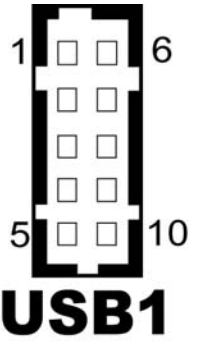
LPT1

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	STB	14	AFD#
2	PDR0	15	ERR#
3	PDR1	16	INIT#
4	PDR2	17	SLIN#
5	PDR3	18	GND
6	PDR4	19	GND
7	PDR5	20	GND
8	PDR6	21	GND
9	PDR7	22	GND
10	ACK#	23	GND
11	BUSY	24	GND
12	PE	25	GND
13	SLCT	26	NC

2-27. UNIVERSAL SERIAL BUS CONNECTOR

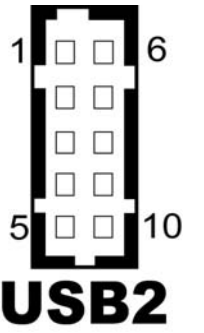
USB1: Universal Serial Bus Connector
The pin assignments are as follows:

PIN	ASSIGNMENT
1	USB4_VCC5
2	USBN8
3	USBP8
4	GND
5	NC
6	USB4_VCC5
7	USBN9
8	USBP9
9	GND
10	NC



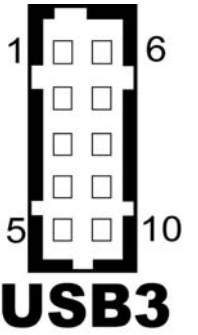
USB2: Universal Serial Bus Connector
The pin assignments are as follows:

PIN	ASSIGNMENT
1	USB3_VCC5
2	USBN6
3	USBP6
4	GND
5	NC
6	USB3_VCC5
7	USBN7
8	USBP7
9	GND
10	NC



USB3: Universal Serial Bus Connector
The pin assignments are as follows:

PIN	ASSIGNMENT
1	USB2_VCC5
2	USBN4
3	USBP4
4	GND
5	NC
6	USB2_VCC5
7	USBN5
8	USBP5
9	GND
10	NC



2-28. IRDA CONNECTOR

IR1: IrDA (Infrared) Connector
The pin assignments are as follows:

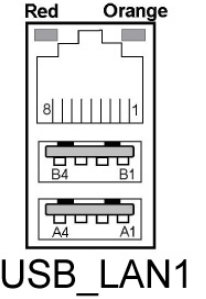
PIN	ASSIGNMENT
1	VCC5
2	NC
3	IRRX
4	GND
5	IRTX

2-29. USB&LAN CONNECTOR

USB_LAN1: USB & LAN Connector
The pin assignments are as follows：

LAN Signal ：

PIN	ASSIGNMENT
1	VCC_LAN1
2	LAN1_MDI_0P
3	LAN1_MDI_0N
4	LAN1_MDI_1P
5	LAN1_MDI_1N
6	LAN1_MDI_2P
7	LAN1_MDI_2N
8	LAN1_MDI_3P
9	LAN1_MDI_3N
10	COM_LAN1



LAN LED Indicator:
Left Side LED

RED Color On	Giga LAN Speed Indicator
Off	No LAN switch/ hub connected.

Right Side LED

Orange Color Blinking	LAN Message Active
Off	No LAN Message Active

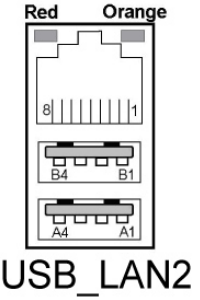
USB Signal：

PIN	ASSIGNMENT
A1	VCCUSB1
A2	USBP1N
A3	USBP1P
A4	GND
B1	VCCUSB0
B2	USBP0N
B3	USBP0P
B4	GND

USB_LAN2: USB & LAN Connector
The pin assignments are as follows：

LAN Signal ：

PIN	ASSIGNMENT
1	VCC_LAN2
2	LAN2_MDI_0P
3	LAN2_MDI_0N
4	LAN2_MDI_1P
5	LAN2_MDI_1N
6	LAN2_MDI_2P
7	LAN2_MDI_2N
8	LAN2_MDI_3P
9	LAN2_MDI_3N
10	COM_LAN2



LAN LED Indicator:
Left Side LED

RED Color On	Giga LAN Speed Indicator
Off	No LAN switch/ hub connected.

Right Side LED

Orange Color Blinking	LAN Message Active
Off	No LAN Message Active

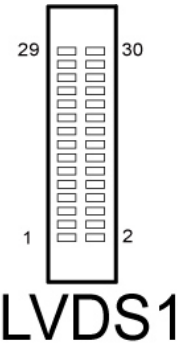
USB Signal：

PIN	ASSIGNMENT
A1	VCCUSB3
A2	USBP3N
A3	USBP3P
A4	GND
B1	VCCUSB2
B2	USBP2N
B3	USBP2P
B4	GND

2-30. LVDS CONNECTOR

LVDS1：LVDS CONNECTOR

The pin assignments are as follows：

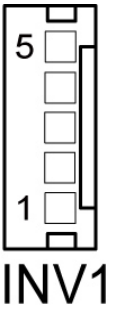


PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	LCD_VCC	2	GND
3	ZCM	4	ZCP
5	GND	6	Z2M
7	Z2P	8	GND
9	Z1M	10	Z1P
11	Z3P	12	Z3M
13	Z0P	14	Z0M
15	GND	16	YCP
17	YCM	18	GND
19	Y2P	20	Y2M
21	GND	22	Y1P
23	Y1M	24	GND
25	Y0P	26	Y0M
27	Y3P	28	Y3M
29	LCD_VCC	30	LCD_VCC

2-31. INVERTER CONNECTOR

INV1：LVDS Panel Voltage Selection.

The pin assignments are as follows：

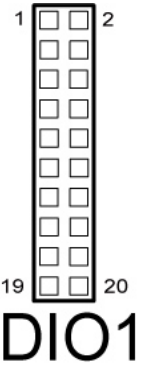


PIN	ASSIGNMENT
1	+12V
2	GND
3	VCC
4	GND
5	ENABKL (Inverter Backlight ON/OFF Control Signal)

2-32. DIGITAL INPUT/OUTPUT CONNECTOR

DIO1 : Digital I/O Connector
The pin assignments are as follows :

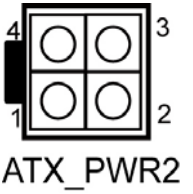
PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	VCC	2	GND
3	VCC	4	GND
5	DIN0	6	DOUT0
7	DIN1	8	DOUT1
9	DIN2	10	DOUT2
11	DIN3	12	DOUT3
13	DIN4	14	DOUT4
15	DIN5	16	DOUT5
17	DIN6	18	DOUT6
19	DIN7	20	DOUT7



2-33. ATX POWER CONNECTOR

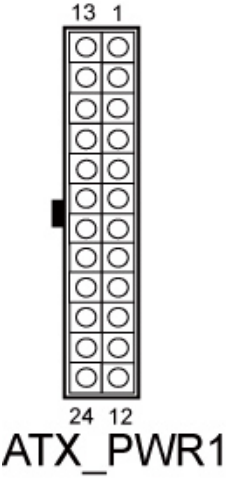
ATX_PW2 : ATX 12V Connector
The pin assignments are as follows:

PIN	ASSIGNMENT
1	GND
2	GND
3	+12V
4	+12V



ATX_PW1 : ATX Power Connector
The pin assignments are as follows:

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	+3.3V	13	+3.3V
2	+3.3V	14	-12V
3	GND	15	GND
4	+5V	16	PSON
5	GND	17	GND
6	+5V	18	GND
7	GND	19	GND
8	POK	20	-5V
9	5VSB	21	+5V
10	+12V	22	+5V
11	+12V	23	+5V
12	+3.3V	24	GND



2-34. SOUND CONNECTOR

AUDIO1 : Sound Connector, including Line-In, Line-Out & Mic. Also can support only MIC connector. The pin assignments are as follows :

Line-In

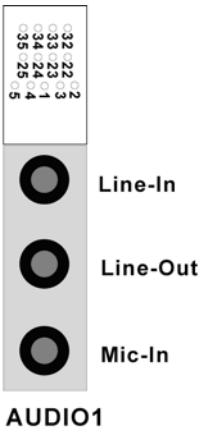
PIN	ASSIGNMENT
32	HD_LINE-L
33	GND
34	GND
35	HD_LINE-R

Line-Out

PIN	ASSIGNMENT
22	HD_OUT-L
23	NC
24	NC
25	HD_OUT-R

Mic-In

PIN	ASSIGNMENT
1	GND
2	HD_MIC1
3	HD_MIC_GND
4	NC
5	HD_MIC_VCC



2-35. CD AUDIO-IN CONNECTOR

CD_IN1 : CD Audio-In Connector
The pin assignments are as follows:

PIN	ASSIGNMENT
1	CD-L
2	CD-REF
3	CD-REF
4	CD-R

2-36. MEMORY INSTALLATION

PMB-732LF CPU Card can support up to 4GB in four DIMM sockets.
DRAM BANK CONFIGURATION

DIMM 1	DIMM 2	TOTAL MEMORY
128MB	128MB	256MB
256MB	256MB	512MB
512MB	512MB	1GB
1GB	1GB	2GB
2GB	2GB	4GB

SOFTWARE UTILITIES

CHAPTER

3

This chapter comprises the detailed information of VGA driver, LAN driver, Sound driver, and flash BIOS update. It also describes on how to configuration the watchdog timer.

Section includes:

- Introduction.
- VGA Driver Utility
- Flash BIOS Update
- LAN Driver Utility
- Sound Driver Utility
- Intel® Chipset Software Installation Utility
- Watchdog Timer Configuration

3-1. INTRODUCTION

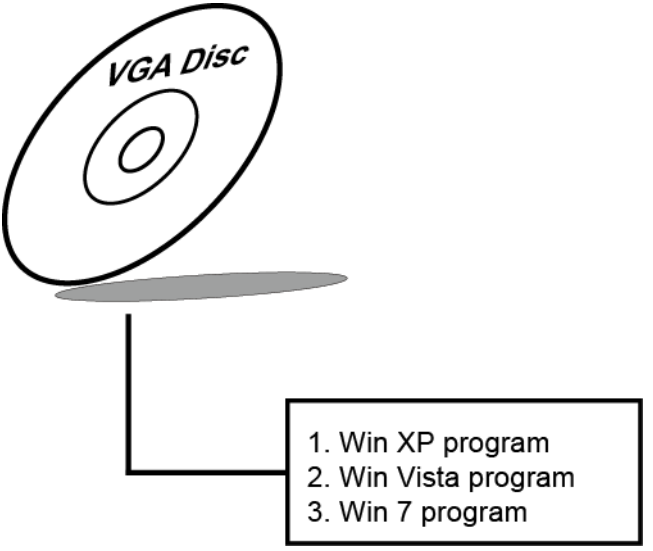
Enclosed with our PMB-732LF package is our driver utility, which may comes in a form of a CD ROM disc or floppy diskettes. For CD ROM disc user, you will only need some of the files contained in the CD ROM disc, please kindly refer to the following chart:

Filename (Assume that CD ROM drive is D:)	**Purpose**
D:\Driver\VGA	Intel GM45 For VGA driver installation
D:\Driver\FLASH	For BIOS update utility
D:\Driver\LAN	For LAN Driver installation
D:\Driver\Sound	Realtek ALC888 For Sound driver installation
D:\Driver\UTILITY	Intel® Chipset Software Installation Utility For Win XP ,Vista, 7
D:\Driver\RAID AHCI	Intel Matrix Storage Manager Utility
D:\Driver\RAID AHCI\ f6flpy	Intel F6 Floppy Utility For XP

🔔 User should remember to install the Utility right after the OS fully installed.

3-2. VGA DRIVER UTILITY

The VGA interface embedded with our PMB-732LF can support a wide range of display. You can display CRT, PCI-E (SDVO) simultaneously with the same mode.



3-2-1. Installation of VGA Driver:

To install the VGA Driver, simply follow the following steps:

1. Place insert the Utility Disk into Floppy Disk Drive A/B or CD ROM drive.
2. Under Windows XP/Vista/7 system, go to the directory where VGA driver is located.
3. Click **Setup.exe** file for VGA driver installation.
4. Follow the instructions on the screen to complete the installation.
5. Once installation is completed, shut down the system and restart in order for the changes to take effect.

3-3. FLASH BIOS UPDATE

3-3-1. System BIOS Update:

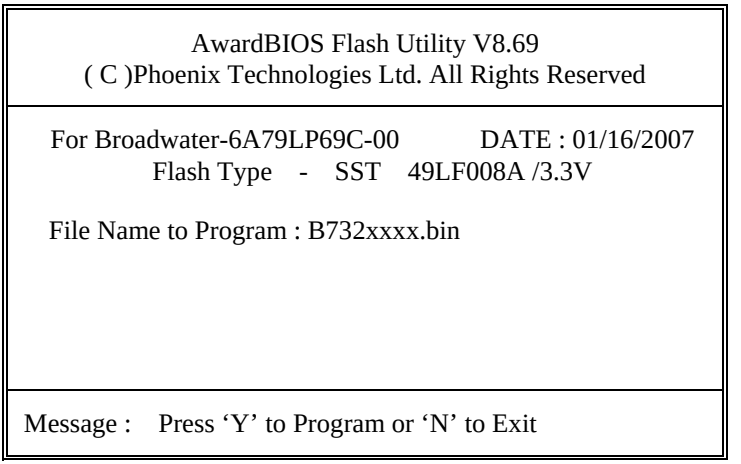
Users of PMB-732LF can use the program "Awdflash.exe" contained in CD ROM for BIOS update. This is found in D:\flash\Awdflash.exe.

3-3-2. To update BIOS :

(1) Install "Awdflash.exe" from the CD ROM Disk into your system.
(2) Insert the new BIOS file you have obtained from Protech.
(3) Type the pathname to Awdflash.exe and execute the BIOS update with file B732xxxx.bin
C:\UTIL\AWDFLASH\AWARDFLASH B732xxxx.bin
(4) The screen will display the table below:

AwardBIOS Flash Utility V8.69 (C)Phoenix Technologies Ltd. All Rights Reserved
For Broadwater-6A79LP69C-00 DATE : 01/16/2007 Flash Type - SST 49LF008A /3.3V File Name to Program : B732xxxx.bin
Message : Do You Want To Save BIOS (Y/N)

If you want to save up the original BIOS, enter “Y ”and press < Enter > . If you choose “N”, the following table will appear on screen.

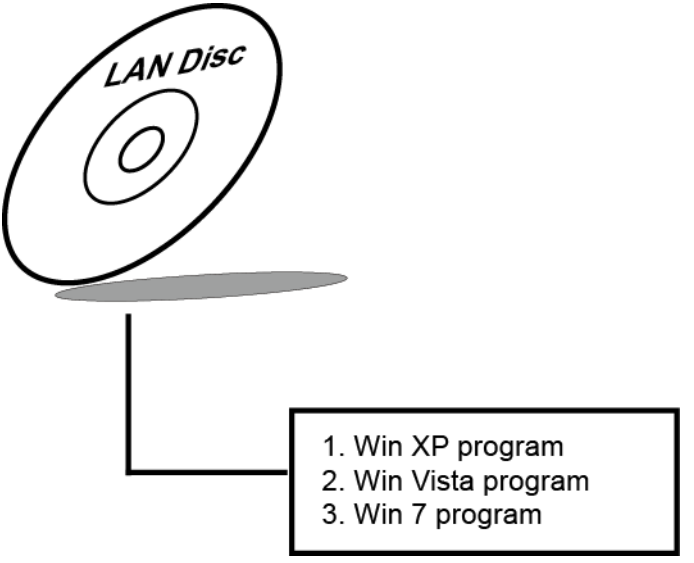

AwardBIOS Flash Utility V8.69
(C)Phoenix Technologies Ltd. All Rights Reserved
For Broadwater-6A79LP69C-00 DATE : 01/16/2007
Flash Type - SST 49LF008A /3.3V
File Name to Program : B732xxxx.bin
Message : Press ‘Y’ to Program or ‘N’ to Exit

Select “Y”, and the BIOS will be renewed. When you are refreshing your BIOS, do not turn off or reset the system, or you will damage the BIOS. After you have completed all the programming, you will see the line: “Reset System or power off to accomplish update process!”. Please turn off or reset the system. Then the Flash BIOS is fully implemented.

3-4. LAN DRIVER UTILITY

3-4-1. Introduction

PMB-732LF is enhanced with LAN function that can support various network adapters. Installation programs for LAN drivers are listed as follows:

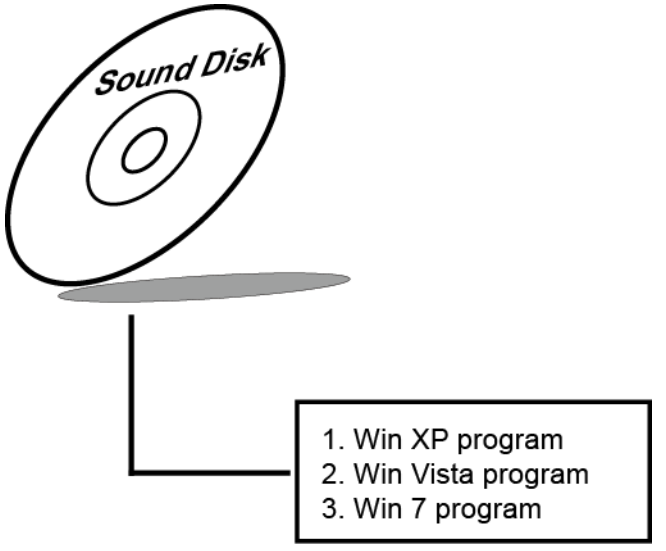


For more details on Installation procedure, please refer to Readme.txt file found on LAN DRIVER UTILITY.

3-5. SOUND DRIVER UTILITY

3-5-1. Introduction

The Realtek ALC888 sound function enhanced in this system is fully compatible with Windows XP, Windows Vista and Windows 7. Below, you will find the content of the Sound driver:



3-5-2. Installation Procedure for Windows XP/Vista/7

1. From the task bar, click on Start, and then Run.
2. In the Run dialog box, type D:\Sound\path\setup, where "D:\Sound\pathname" refers to the full path to the source files.
3. Click on the OK button or press the ENTER key.
4. Click on the "Next" and OK prompts as they appear.
5. Reboot the system to complete the driver installation.

3-6. INTEL® CHIPSET SOFTWARE INSTALLATION UTILITY

3-6-1. Introduction

The Intel® Chipset Software Installation Utility installs to the target system the Windows* INF files that outline to the operating system how the chipset components will be configured. This is needed for the proper functioning of the following features:

- Core PCI and ISAPNP Services
- AGP Support
- IDE/ATA33/ATA66/ATA100 Storage Support
- USB Support
- Identification of Intel® Chipset Components in Device Manager

3-6-2. Installation of Utility for Windows XP/Vista/7

The Utility Pack is to be installed only for Windows XP, Vista, and 7 program.
It should be installed right after the OS installation, kindly follow the following steps:

1. Place insert the Utility Disk into Floppy Disk Drive A/B or CD ROM drive.
2. Under Windows XP/Vista/7 system, go to the directory where Utility Disc is located.
3. Click **Setup.exe** file for utility installation.
4. Follow the instructions on the screen to complete the installation.
5. Once installation is completed, shut down the system and restart in order for the changes to take effect.

3-7. WATCHDOG TIMER CONFIGURATION

The I/O port address of the watchdog timer is 2E(hex) and 2F(hex). 2E (hex) is the address port. 2F(hex) is the data port. User must first assign the address of register by writing address value into address port 2E(hex), then write/read data to/from the assigned register through data port 2F (hex).

Configuration Sequence

There are three steps to completing the configuration setup:
(1) Enter the MB PnP Mode.
(2) Modify the data of configuration registers.
(3) Exit the MB PnP Mode.
Undesired result may occur if the MB PnP Mode is not exited normally.

(1) Enter the MB PnP Mode

To enter the MB PnP Mode, four special I/O write operations are to be performed.

(2) Modify the data of configuration registers

All configuration registers can be accessed after entering the MB PnP Mode. Before accessing a selected register, the content of index 07h must be changed to the LDN to which the register belongs, except some Global registers.

(3) Exit the MB PnP Mode

Set bit 1 of the configure control register (index=02h) to "1" to exit the MB PnP Mode.

Sample code:

```
;************************************************;
;Enter PnP Mode
;************************************************;
MOVDX,2Eh
MOVAL,87h
OUTDX,AL
MOVAL,01h
OUTDX,AL
MOVAL,55h
OUTDX,AL
MOVAL,55h
OUTDX,AL
;************************************************;
;Select LDN to 07h
;************************************************;
MOVDX,2Eh
```

```
MOVAL,07h
OUTDX,AL
MOVDX,2Fh
MOVAL,07h
OUTDX,AL
;************************************************;
;Select Time resolution by index 72h
;AL=C0h Second resolution
;AL=80h Minute resolution
;************************************************;
MOVDX,2Eh
MOVAL,72h
OUTDX,AL
MOVDX,2Fh
MOVAL,0C0h
OUTDX,AL
;************************************************;
;Write non-zero value into index 73h
;for Enable WDT and Start count down.
;************************************************;
MOVDX,2Eh
MOVAL,73h
OUTDX,AL
MOVDX,2Fh
MOVAL,02h
OUTDX,AL
;************************************************;
;Write zero value into register AL
;for Disable WDT.
;************************************************;
MOVDX,2Eh
MOVAL,73h
OUTDX,AL
MOVDX,2Fh
MOVAL,00h
OUTDX,AL
;************************************************;
;Exit PnP Mode
;************************************************;
MOVDX,2Eh
MOVAL,02h
OUTDX,AL
MOVDX,2Fh
MOVAL,02h
OUTDX,AL
```

AWARD BIOS SETUP

CHAPTER 4

This chapter shows how to set up the Award BIOS.

Section includes:

- Introduction
- Entering Setup
- The Standard CMOS Features
- The Advanced BIOS Features
- The Advanced Chipset Features
- Integrated Peripherals
- Power Management Setup
- PNP/PCI Configuration
- PC Health Status
- Load Fail-Safe Defaults
- Load Optimized Defaults
- Password Setting
- Save and Exit Setup
- Exit Without Saving

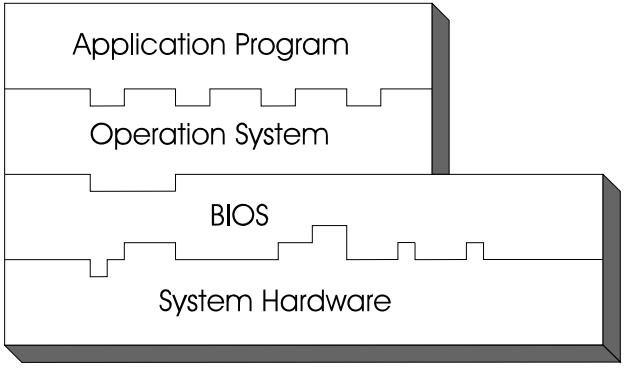
4-1. INTRODUCTION

This chapter will show you the function of the BIOS in managing the features of your system. The PMB-732LF Intel Core 2 Duo ATX Motherboard is equipped with the BIOS for system chipset from Phoenix - Award Software Inc. This page briefly explains the function of the BIOS in managing the special features of your system. The following pages describe how to use the BIOS for system chipset Setup menu.

Your application programs (such as word processing, spreadsheets, and games) rely on an operating system such as DOS or OS/2 to manage such things as keyboard, monitor, disk drives, and memory.

The operating system relies on the BIOS (Basic Input and Output system), a program stored on a ROM (Read-only Memory) chip, to initialize and configure your computer's hardware. As the interface between the hardware and the operating system, the BIOS enables you to make basic changes to your system's hardware without having to write a new operating system.

The following diagram illustrates the interlocking relationships between the system hardware, BIOS, operating system, and application program:



4-2. ENTERING SETUP

When the system is powered on, the BIOS will enter the Power-On Self Test (POST) routines and the following message will appear on the lower screen:

PRESS <DEL> TO ENTER SETUP, ESC TO SKIP MEMORY TEST

As long as this message is present on the screen you may press the <Del> key (the one that shares the decimal point at the bottom of the number keypad) to access the Setup program. In a moment, the main menu of the Award SETUP program will appear on the screen:

Phoenix - AwardBIOS CMOS Setup Utility

►Standard CMOS Features	Load Fail-Safe Defaults
►Advanced BIOS Features	Load Optimized Defaults
►Advanced Chipset Features	Set Supervisor Password
►Integrated Peripherals	Set User Password
►Power Management Setup	Save & Exit Setup
►PnP/PCI Configurations	Exit Without Saving
►PC Health Status	
Esc : Quit F10 : Save & Exit Setup	↑↓→← : Select Item
Time, Date, Hard Disk Type ….	

Setup program initial screen

You may use the cursor the up/down keys to highlight the individual menu items. As you highlight each item, a brief description of the highlighted selection will appear at the bottom of the screen.

4-3. THE STANDARD CMOS FEATURES

Highlight the "STANDARD CMOS FEATURES" and press the <ENTER> key and the screen will display the following table:

Phoenix - AwardBIOS CMOS Setup Utility
Standard CMOS Features

Date (mm:dd:yy)	Thu, Jul 16 2009	Item Help
Time (hh:mm:ss)	11 : 13 : 32	
		Menu Level ►
► IDE Channel 0 Master	[None]	
► IDE Channel 1 Master	[None]	Change the day, month, year and century
► IDE Channel 2 Master	[None]	
► IDE Channel 2 Slave	[None]	
► IDE Channel 3 Master	[None]	
► IDE Channel 3 Slave	[None]	
Drive A	[None]	
Halt On	[All Errors]	
Base Memory	639K	
Extended Memory	2027520K	
Total Memory	2028544K	
↑↓→←: Move Enter: Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help F5: Previous Values F6: Fail-Safe Defaults F7:Optimized Defaults		

CMOS Setup screen

In the above Setup Menu, use the arrow keys to highlight the item and then use the <PgUp> or <PgDn> keys to select the value you want in each item.

DATE:

< Month >, < Date > and <Year >. Ranges for each value are in the CMOS Setup Screen, and the week-day will skip automatically.

TIME:

< Hour >, < Minute >, and < Second >. Use 24 hour clock format, i.e., for PM numbers, add 12 to the hour. For example: 4: 30 P.M. You should enter the time as 16:30:00.

IDE CHANNEL 0/1/2/3 MASTER/SLAVE:

The BIOS can automatically detect the specifications and optimal operating mode of almost all SATA hard drives. When you select type AUTO for a hard drive, the BIOS detect its specifications during POST, every time system boots.

If you do not want to select drive type AUTO, other methods of selecting drive type are available:

1. Match the specifications of your installed SATA hard drive(s) with the preprogrammed values for hard drive types 1 through 45.
2. Select USER and enter values into each drive parameter field.
3. Use the SATA HDD AUTO DETECTION function in Setup.

Here is a brief explanation of drive specifications:

Type: The BIOS contains a table of pre-defined drive types. Each defined drive type has a specified number of cylinders, number of heads, write precompensation factor, landing zone, and number of sectors. Drives whose specifications do not accommodate any predefine type are classified as type USER.

- Size: Disk drive capacity (approximate). Note that this size is usually greater than the size of a formatted disk given by a disk-checking program.
- Cyls: number of cylinders.
- Head: number of heads.
- Precomp: write precompensation cylinders.
- Landz: landing zone.
- Sector: number of sectors.
- Mode: Auto, Normal, Large or LBA.

  Auto: The BIOS automatically determines the optimal mode.

  - Normal: Maximum number of cylinders, heads, sectors supported are 1024, 16 and 63.
  - Large: For drives that do not support LBA and have more than 1024 cylinders.
  - LBA (Logical Block Addressing): During drive accesses, the

SATA controller transforms the data address described by sector, head and cylinder number into a physical block address, significantly improving data transfer rates. For drives greater than 1024 cylinders.

DRIVE A:

Select the type of floppy disk drive installed in your system. The available options are 360KB 5.25in, 1.2KB 5.25in, 720KB 3.5in, 1.44MB 3.5in, 2.88MB 3.5in and None.

HALT ON:

This category allows user to choose whether the computer will stop if an error is detected during power up. Available options are "All errors", "No errors", "All, But keyboard", "All, But Diskette", and "All But Disk/Key".

BASE MEMORY:

Displays the amount of conventional memory detected during boot up.

EXTENDED MEMORY:

Displays the amount of extended memory detected during boot up.

TOTAL MEMORY:

Displays the total memory available in the system.

4-4. THE ADVANCED BIOS FEATURES

Choose the "ADVANCED BIOS FEATURES" in the main menu, the screen shown as below.

Phoenix - AwardBIOS CMOS Setup Utility
Advanced BIOS Features

► Hard Disk Boot Priority	[Press Enter]	Item Help
First Boot Device	[Hard Disk]	
Second Boot Device	[CDROM]	
Third Boot Device	[Hard Disk]	Menu Level ►
Boot Other Device	[Enabled]	
Gate A20 Option	[Fast]	
Security Option	[Setup]	
APIC Mode	[Enabled]	
MPS Version Control For OS	[1.4]	

↑↓→←: Move Enter: Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5: Previous Values F6: Fail-Safe Defaults F7:Optimized Defaults

BIOS Features Setup Screen

The "BIOS FEATURES SETUP" allow you to configure your system for basic operation. The user can select the system's boot-up sequence and security.

A brief introduction of each setting is given below.

HARD DISK BOOT PRIORITY:

The options for these items are found in its sub menu. By pressing the <ENTER> key, you are prompt to enter the sub menu of the detailed options as shown below:

Phoenix – Award CMOS Setup Utility
Hard Disk Boot Priority

1. SATA 1. : HDS728080PLA380 2. Bootable Add-in Cards	Item Help
	Menu Level ►
	Use<↑> or <↓> to select a device, then press <+> to move it up, or <-> to move it down the list. Press <ESC> to exit this menu.
↑↓→←:Move Enter: Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help F5: Previous Values F6:Fail-Safe Defaults F7:Optimized Defaults	

Select Hard Disk Boot Device Priority

FIRST/SECOND/ THIRD/ OTHER BOOT DEVICE:

The BIOS attempt to load the operating system from the devices in the sequence selected in these items.

GATE A20 OPTION:

This entry allows you to select how the gate A20 is handled. When Normal was set, a pin in the keyboard controller controls Gate A20. And when Fast was set, the chipset controls Gate A20.

SECURITY OPTION:

This category allows you to limit access to the system and Setup, or just to Setup.

System	The system will not boot and access to Setup will be denied if the correct password is not entered at the prompt.
Setup	The system will boot, but access to Setup will be denied if the correct password is not entered at the prompt.

- To disable security, select PASSWORD SETTING at Main Menu and then you will be asked to enter password. Do not type anything and just press <Enter>, it will disable security. Once the security is disabled, the system will boot and you can enter Setup freely.

APIC MODE:

To Enable Advanced Programmable Interrupt Controller

MPS VERSION CONTROL FOR OS:

This option is only valid for multiprocessor motherboards as it specifies the version of the Multiprocessor Specification (MPS) that the motherboard will use. The MPS is a specification by which PC manufacturers design and build Intel architecture systems with two or more processors.

4-5. ADVANCED CHIPSET FEATURES

Choose the "ADVANCED CHIPSET FEATURES" from the main menu, the screen shown as below.

Phoenix - AwardBIOS CMOS Setup Utility
Advanced Chipset Features

▶ PCI Express Root Port Func	[Press Enter]	Item Help
GbE LAN	[Enabled]	
** VGA Setting **		Menu Level ▶
PEG/Onchip VGA Control	[Auto]	
PEG Force X1	[Disabled]	
On-Chip Frame Buffer Size	[64MB]	
DVMT Mode	[Enable]	
Total GFX Memory	[128 MB]	
** VGA Boot Device Setting **		
Boot Display	[CRT]	
Panel Type	[800x600 LVDS]	
TV Type	[VBIOS Default]	

↑↓→←: Move Enter: Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5: Previous Values F6: Fail-Safe Defaults F7:Optimized Defaults

Chipset Features Setup Screen

This parameter allows you to configure the system based on the specific features of the installed chipset. The chipset manages bus speed and access to system memory resources, such as DRAM and the external cache.

It also coordinates communications between conventional ISA bus and the PCI bus. It must be stated that these items should never need to be altered. The default settings have been chosen because they provide the best operating conditions for the system. The only time you might consider making any changes would be if you discovered that data was being lost while using your system.

PCI EXPRESS ROOT PORT FUNC:

The options for these items are found in its sub menu. By pressing the <ENTER> key, you are prompt to enter the sub menu of the detailed options as shown below:

Phoenix – Award CMOS Setup Utility
PCI Express Root Port Func

PCI Express Port 1	[Auto]	Item Help
PCI Express Port 2	[Auto]	
PCI Express Port 3	[Auto]	
PCI Express Port 4	[Auto]	Menu Level ►
PCI Express Port 5	[Enabled]	
PCI Express Port 6	[Auto]	
PCI-E Compliancy Mode	[v1.0a]	

↑↓→←:Move Enter: Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5: Previous Values F6:Fail-Safe Defaults F7:Optimized Defaults

GbE LAN:

Control Lan device Enable/Disable.

PEG/ONCHIP VGA CONTROL:

PCI-Express Graphics / On-Chip VGA and Auto Selection.

PEG FORCE X1:

To Enable/Disable X1.

ON-CHIP FRAME BUFFER SIZE:

The On-Chip Frame Buffer Size can be set as 32MB. This memory is shared with the system memory.

DVMT MODE:

Intel Dynamic Video Memory Technology Mode.

TOTAL GFX MEMORY:

This field allows user to decide TOTAL GFX MEMORY. The available choices are: 128MB, 256MB, MAX.

BOOT DISPLAY:

To select the boot-up display type.

PANEL TYPE:

This field allows user to decide the LVDS panel resolution. The available choices are: 800x600 LVDS, 1024x768 LVDS, 1280x1024 LVDS.

TV TYPE:

To select TV Format type.

4-6. INTEGRATED PERIPHERALS

Choose "INTEGRATED PERIPHERALS" from the main setup menu, a display will be shown on screen as below:

Phoenix - AwardBIOS CMOS Setup Utility
Integrated Peripherals

▶ OnChip IDE Device	[Press Enter]	Item Help
▶ SuperIO Device	[Press Enter]	
Onboard Serial Port 3	[3E8/IRQ11]	Menu Level ▶
Onboard Serial Port 4	[2E8/IRQ10]	
Watch Dog Timer Select	[Disabled]	
▶ USB Device Setting	[Press Enter]	
Onboard Lan2 Controller	[Enabled]	

↑↓→←: Move Enter: Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5: Previous Values F6: Fail-Safe Defaults F7:Optimized Defaults

Integrated Peripherals Setup Screen

By moving the cursor to the desired selection and by pressing the <F1> key, the all options for the desired selection will be displayed for choice.

If bios setup menu item supports USB device boot, it will cause Win9x detects the same storages twice when the system is rebooted, and USB HDD will fail. Note: this cause just happen under Win9x, the phenomenon is a limitation.

ONCHIP IDE DEVICE:

The options for these items are found in its sub menu. By pressing the <ENTER> key, you are prompt to enter the sub menu of the detailed options as shown below:

Phoenix – Award CMOS Setup Utility
OnChip IDE Device

IDE HDD Block Mode	[Enabled]	Item Help
IDE DMA transfer access	[Enabled]	
IDE Primary Master PIO	[Auto]	
IDE Primary Slave PIO	[Auto]	Menu Level ►
IDE Primary Master UDMA	[Auto]	
IDE Primary Slave UDMA	[Auto]	If your IDE hard drive supports block mode select Enabled for automatic detection of the optional number of block read/writes per sector the drive can support.
On-Chip Secondary PCI IDE	[Enabled]	
IDE Secondary Master PIO	[Auto]	
IDE Secondary Slave PIO	[Auto]	
IDE Secondary Master UDMA	[Auto]	
IDE Secondary Slave UDMA	[Auto]	
SATA Mode	[IDE]	
LEGACY Mode Support	[Disabled]	

↑↓→←:Move Enter: Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5: Previous Values F6:Fail-Safe Defaults F7:Optimized Defaults

Descriptions on each item above are as follows:

1. **IDE HDD BLOCK MODE**
   Block mode is also called block transfer, multiple commands, or multiple sector read/write. If your IDE hard drive supports block mode (most new drives do), select Enabled for automatic detection of the optimal number of block read/writes per sector the drive can support.

2. **IDE DMA TRANSTER ACCESS**
   To Enable/Disable the IDE DMA transfer access

3. **IDE PRIMARY/ SECONDARY MASTER/SLAVE PIO**
   The four IDE PIO fields allow you to set a PIO mode (0-4) for each of the four IDE devices that the onboard IDE interface supports. Modes 0 through 4 provide successively increased performance. In Auto mode, the system automatically determines the best mode for each device.

4. IDE PRIMARY/ SECONDARY MASTER/SLAVE UDMA

Ultra DMA/33 implementation is possible only if your IDE hard drive supports it and the operating environment includes a DMA driver (Windows 95 OSR2 or a third-party IDE bus master driver). If you hard drive and your system software both support Ultra DMA/33, select Auto to enable BIOS support.

5. ON-CHIP SECONDARY PCI IDE

The integrated peripheral controller contains an IDE interface with support for Secondary PCI IDE Channel.

6. SATA MODE

To select SATA Mode.

7. LEGACY MODE SUPPORT

Certain OS (Windows 9X/ME) is not supported under Native mode.

SUPER IO DEVICE:

The options for these items are found in its sub menu. By pressing the <ENTER> key, you are prompt to enter the sub menu of the detailed options as shown below:

Phoenix – Award CMOS Setup Utility
SuperIO Device

Onboard FDC Controller	[Enabled]	Item Help
Onboard Serial Port 1	[3F8/IRQ4]	
Onboard Serial Port 2	[2F8/IRQ3]	
UART Mode Select	[Normal]	Menu Level ►
RxD, TxD Active	[Hi, Lo]	
IR Transmission Delay	[Enabled]	
X UR2 Duplex Mode	Half	
X Use IR Pins	IR-Rx2Tx2	
Onboard Parallel Port	[378/IRQ7]	
Parallel Port Mode	[Standard]	
X ECP Mode Use DMA	3	
PWRON After PWR-Fail	[On]	

↑↓→←:Move Enter: Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5: Previous Values F6:Fail-Safe Defaults F7:Optimized Defaults

Descriptions on each item above are as follows:

1. **ONBOARD FDC CONTROLLER**
   Select Enabled if the system has a floppy disk controller (FDC) installed on the system board and you wish to use it. If you install and-in FDC or the system has no floppy drive, select Disabled.

2. **ONBOARD SERIAL PORT 1/2**
   Select an address and corresponding interrupt for the first and second serial ports.

3. **UART MODE SELECT**
   This item allows you to select UART mode.

4. **RxD, TxD ACTIVE**
   This item allows you to determine the active of RxD, TxD.

5. **IR TRANSMISSION DELAY**
   This item allows you to enable/disable IR transmission delay.

6. **UR2 DUPLEX MODE**
   This item allows you to select the IR half/full duplex function.

7. **USE IR PINS**
   This item allows you to select IR transmission routes, one is RxD2m, TxD2 (COM Port) and the other is IR-Rx2Tx2.

8. **ONBOARD PARALLEL PORT**
   This item allows you to determine access onboard parallel port controller with which I/O address.

9. **PARALLEL PORT MODE**
   Select an operating mode for the onboard parallel (printer) port. Select *Normal, Compatible,* or *SPP* unless you are certain your hardware and software both support one of the other available modes.

10. **ECP MODE USE DMA**
    Select a DMA channel for the parallel port for use during ECP mode.

11. **PWRON AFTER PWR-FAIL**
    This item allows you to select if you want to power on the system after power failure. The choice:Off,On,Former-Sts.

ONBOARD SERIAL PORT 3/4:

Select an address and corresponding interrupt for third and forth serial port.

WATCH DOG SUPPORT:

To select watch-dog times.

USB DEVICE SETTING:

The options for these items are found in its sub menu. By pressing the <ENTER> key, you are prompt to enter the sub menu of the detailed options as shown below:

Phoenix – Award CMOS Setup Utility
USE Device Setting

USB 1.0 Controller	[Enabled]	Item Help
USB 2.0 Controller	[Enabled]	
USB Operation Mode	[High Speed]	
USB Keyboard Function	[Enabled]	Menu Level ►
USB Mouse Function	[Enabled]	
USB Storage Function	[Enabled]	[Enable] or [Disable] Universal Host Controller Interface for Universal Serial Bus.
*** USB Mass Storage Device Boot	Setting ***	
↑↓→←:Move Enter: Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help F5: Previous Values F6:Fail-Safe Defaults F7:Optimized Defaults		

Descriptions on each item above are as follows:

1. **USB 1.0 CONTROLLER**
   This should be enabled if your system has a USB installed on the system board and you want to use it. Even when so equipped, if you add a higher performance controller, you will need to disable this feature.

2. **USB 2.0 CONTROLLER**
   Enable the USB 2.0 controller.

3. **USB OPERATION MODE**
   Select USB operation speed. Configuration options: [Full/Low Speed], [High Speed].

4. **USB KEYBOARD FUNCTION**
   Select Enabled if your system contains a Universal Serial Bus (USB) controller and you have a USB keyboard.

5. **USB MOUSE FUNCTION**

Select Enabled if your system contains a Universal Serial Bus (USB) controller and you have a USB Mouse.

6. USB STORAGE FUNCTION

Enable the USB Storage Function

ONBOARD LAN 2 CONTROLLER:

Control LAN2 device Enable/Disable.

4-7. POWER MANAGEMENT SETUP

Choose "POWER MANAGEMENT SETUP" option on the main menu, a display will be shown on screen as below :

Phoenix - AwardBIOS CMOS Setup Utility
Power Management Setup

ACPI Function	[Enabled]	Item Help
ACPI Suspend Type	[S1(POS)]	
Soft-Off by PWR-BTTN	[Instant-Off]	Menu Level ►
Wake-Up by PCI card	[Enabled]	
Power On by Ring	[Enabled]	

↑↓→←: Move Enter: Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5: Previous Values F6: Fail-Safe Defaults F7:Optimized Defaults

Power Management Setup Screen

The "Power Management Setup" allows the user to configure the system to the most effectively save energy while operating in a manner consistent with your own style of computer use.

ACPI FUNCTION:

Users are allowed to enable or disable the Advanced Configuration and Power Management (ACPI).

ACPI SUSPEND TYPE:

S1 (Power On Suspend)

SOFT-OFF BY PWR-BTTN:

Pressing the power button for more than 4 seconds forces the system to enter the Soft-Off state when the system has "hung". The choices are Delay 4 Sec and Instant-Off.

WAKE-UP BY PCI CARD:

An input signal on the serial Ring Indicator (RI) line (in other words, an incoming call on the modem) awakens the system from the soft-off state.

POWER ON BY RING:

This category enables or disables the powering up of the system when the modem receives a call while the computer is in Soft-Off state.

4-8. PNP/PCI CONFIGURATION

Choose "PNP/PCI CONFIGURATION" from the main menu, a display will be shown on screen as below:

Phoenix - AwardBIOS CMOS Setup Utility
PnP/PCI Configurations

Init Display First [Onboard]	Item Help
	Menu Level ►
↑↓→←: Move Enter: Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help F5: Previous Values F6: Fail-Safe Defaults F7:Optimized Defaults	

PNP/PCI Configuration Setup Screen

The PNP/PCI Configuration Setup describes how to configure PCI bus system. PCI, also known as Personal Computer Interconnect, is a system, which allows I/O devices to operate at speeds nearing the speed of the CPU itself uses when communicating with its own special components.

This section covers technical items, which is strongly recommended for experienced users only.

INIT DISPLAY FIRST:

This item allows you to decide to active whether PCI Slot or on-chip VGA first.

4-9. PC HEALTH STATUS

Choose "PC HEALTH STATUS" from the main menu, a display will be shown on screen as below:

Phoenix - AwardBIOS CMOS Setup Utility
PC Health Status

Shutdown Temperature	[60℃/140℉]	Item Help
Current System Temperature	38℃/ 100℉	Menu Level ►
Current CPU Temperature	37℃/ 98℉	
System Fan Speed	0 RPM	
CPU Fan Speed	4963 RPM	
Vcore	1.16V	
VCC (V)	4.67V	
VBAT (V)	3.13V	
5VSB (V)	4.73V	

↑↓→←: Move Enter: Select +/-/PU/PD:Value F10:Save ESC:Exit F1:General Help
F5: Previous Values F6: Fail-Safe Defaults F7:Optimized Defaults

PC Health Status Setup Screen

The PC Health Status Setup allows you to select whether to choose between monitoring or to ignore the hardware monitoring function of your system.

SHUTDOWN TEMPERATURE:
This item allows you to set up the CPU shutdown Temperature.

CURRENT SYSTEM TEMPERATURE:
This item shows you the current system temperature.

CURRENT CPU TEMPERATURE:
This item shows you the current CPU temperature.

CPU/SYSTEM FAN SPEED:
This item shows you the current CPU/ SYSTEM /Power FAN speed.

VCORE/VCC/VBAT/5VSB:
Show you the voltage of Vcore/Vcc/VBAT/5VSB.

4-10. LOAD FAIL-SAFE DEFAULTS

By pressing the <ENTER> key on this item, you get a confirmation dialog box with a message similar to the following:

To use the BIOS default values, change the prompt to "Y" and press the <Enter > key. CMOS is loaded automatically when you power up the system.

4-11. LOAD OPTIMIZED DEFAULTS

When you press <Enter> on this category, you get a confirmation dialog box with a message similar to the following:

Pressing "Y" loads the default values that are factory setting for optimal performance system operations.

4-12. PASSWORD SETTING

User is allowed to set either supervisor or user password, or both of them. The difference is that the supervisor password can enter and change the options of the setup menus while the user password can enter only but do not have the authority to change the options of the setup menus.

TO SET A PASSWORD

When you select this function, the following message will appear at the center of the screen to assist you in creating a password.

Enter Password:

Type the password up to eight characters in length, and press < Enter >. The password typed now will clear any previously entered password from CMOS memory. You will be asked to confirm the password. Type the password again and press the < Enter > key. You may also press < Esc > to abort the selection and not enter a password.

🔔 User should bear in mind that when a password is set, you will be asked to enter the password everything you enter CMOS setup Menu.

TO DISABLE THE PASSWORD

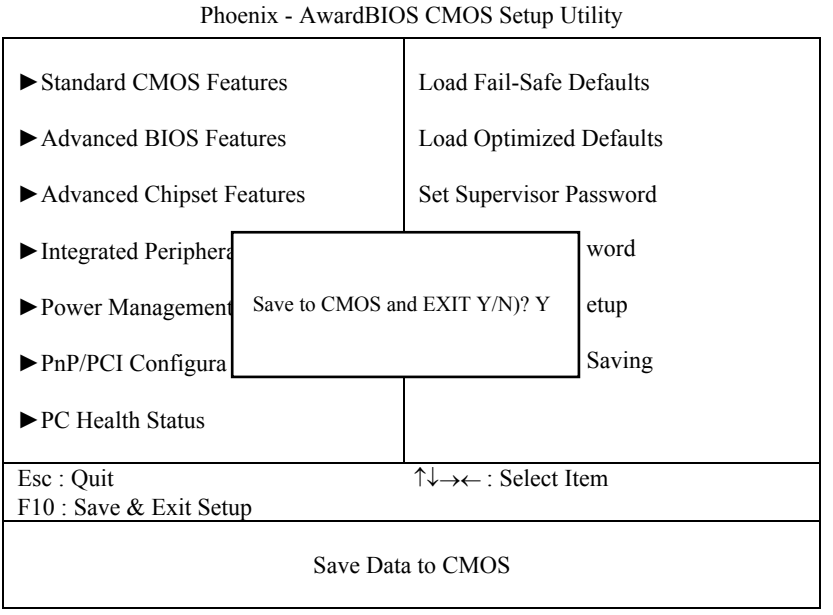
To disable the password, select this function (do not enter any key when you are prompt to enter a password), and press the <Enter> key and a message will appear at the center of the screen:

PASSWORD DISABLED!!! Press any key to continue...

Press the < Enter > key again and the password will be disabled. Once the password is disabled, you can enter Setup freely.

4-13. SAVE & EXIT SETUP

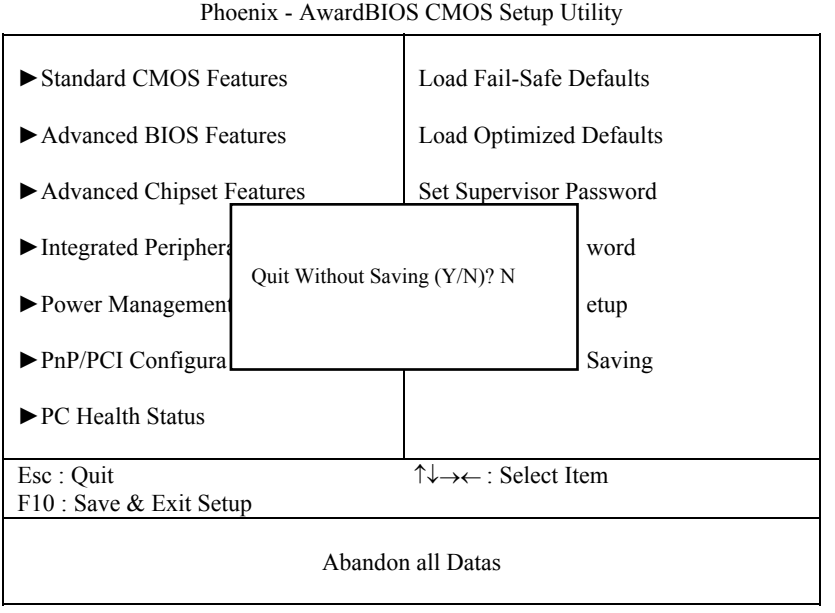
After you have completed adjusting all the settings as required, you must remember to save these setting into the CMOS RAM. To save the settings, select "SAVE & EXIT SETUP" and press <Enter>, a display will be shown as follows:



When you confirm that you wish to save the settings, your system will be automatically restarted and the changes you have made will be implemented. You may always call up the setup program at any time to adjust any of the individual items by pressing the <Del> key during boot up.

4-14. EXIT WITHOUT SAVING

If you wish to cancel any changes you have made, you may select the "EXIT WITHOUT SAVING" and the original setting stored in the CMOS will be retained. The screen will be shown as below:



EXPANSION BUS

APPENDIX

A

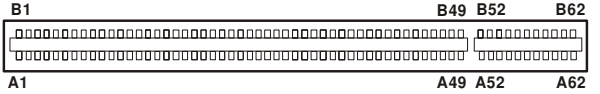
This appendix indicates the pin assignments.

Section includes:

- PCI BUS Pin Assignment

PCI BUS PIN ASSIGNMENT

Like ISA-BUS connector, the PCI-BUS edge connector is also divided into two sets: one consists of 98-pin; the other consists of 22-pin.
The pin assignments are as follows :



B		A		B		A	
PIN	ASSIGNMENT	PIN	ASSIGNMENT	PIN	ASSIGNMENT	PIN	ASSIGNMENT
B1	-12V	A1	TRST#	B31	+3.3V	A31	AD18
B2	TCK	A2	+12V	B32	AD17	A32	AD16
B3	GND	A3	TMS	B33	C/BE2#	A33	+3.3V
B4	TDO	A4	TDI	B34	GND	A34	FRAME#
B5	+5V	A5	+5V	B35	IRDY#	A35	GND
B6	+5V	A6	INTA#	B36	+3.3V	A36	TRDY#
B7	INTB#	A7	INTC#	B37	DEVSEL#	A37	GND
B8	INTD#	A8	+5V	B38	GND	A38	STOP#
B9	REQ3#	A9	CLKC	B39	LOCK#	A39	+3.3V
B10	REQ1#	A10	+5V(I/O)	B40	PERR#	A40	SDONE
B11	GNT3#	A11	CLKD	B41	+3.3V	A41	SB0#
B12	GND	A12	GND	B42	SERR#	A42	GND
B13	GND	A13	GND	B43	+3.3V	A43	PAR
B14	CLKA	A14	GNT1#	B44	C/BE1#	A44	AD15
B15	GND	A15	RST#	B45	AD14	A45	+3.3V
B16	CLKB	A16	+5V(I/O)	B46	GND	A46	AD13
B17	GND	A17	GNT0#	B47	AD12	A47	AD11
B18	REQ0#	A18	GND	B48	AD10	A48	GND
B19	+5V(I/O)	A19	REQ2#	B49	GND	A49	AD09
B20	AD31	A20	AD30	B52	AD08	A52	C/BE0#
B21	AD29	A21	+3.3V	B53	AD07	A53	+3.3V
B22	GND	A22	AD28	B54	+3.3V	A54	AD06
B23	AD27	A23	AD26	B55	AD05	A55	AD04
B24	AD25	A24	GND	B56	AD03	A56	GND
B25	+3.3V	A25	AD24	B57	GND	A57	AD02
B26	C/BE3#	A26	GNT2#	B58	AD01	A58	AD00
B27	AD23	A27	+3.3V	B59	+5V(I/O)	A59	+5V(I/O)
B28	GND	A28	AD22	B60	ACK64#	A60	REQ64#
B29	AD21	A29	AD20	B61	+5V	A61	+5V
B30	AD19	A30	GND	B62	+5V	A62	+5V

TECHNICAL SUMMARY

APPENDIX

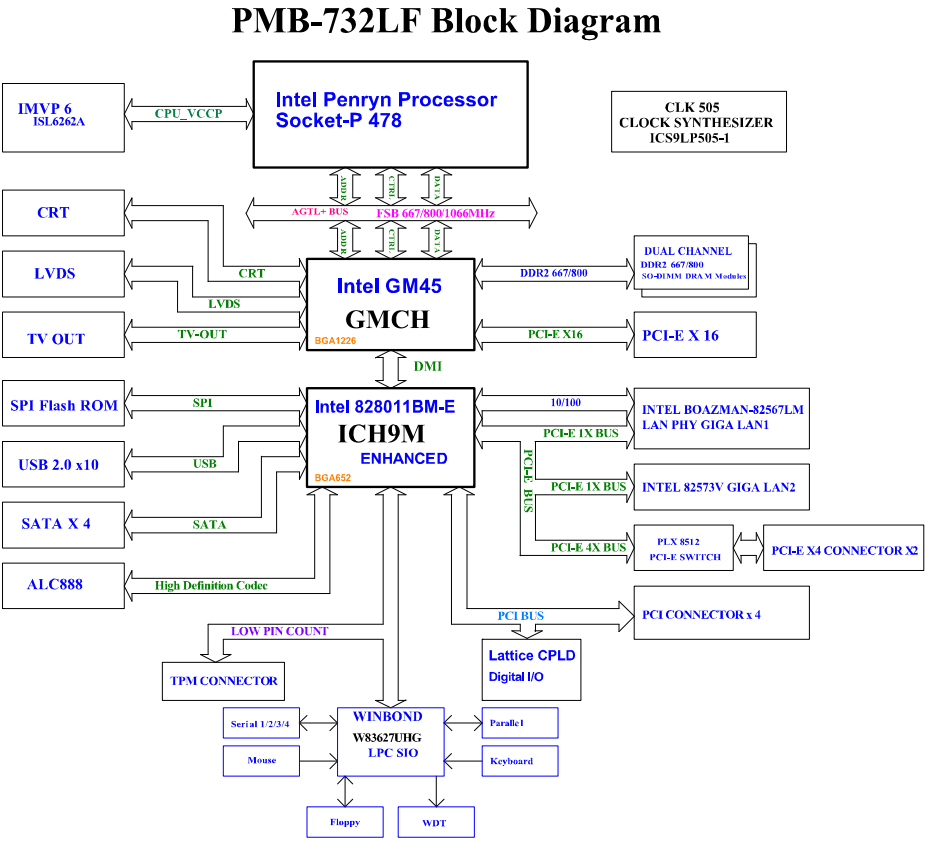
B

This section introduce you the maps concisely.

Section includes:

- Block Diagram
- Interrupt Map
- DMA Channels Map
- I / O Map
- Memory Map

BLOCK DIAGRAM



INTERRUPT MAP

IRQ	ASSIGNMENT
0	High precision event timer
1	Standard 101/102-Key or Microsoft Natural PS/2 Keyboard
3	Communications Port (COM2)
4	Communications Port (COM1)
6	Standard floppy disk controller
8	High precision event timer
9	Microsoft ACPI-Compliant System
10	Communications Port (COM4)
11	Communications Port (COM3)
11	Intel(R) ICH9 Family SMBus Controller - 2930
12	PS/2 Compatible Mouse
13	Numeric data processor
16	Mobile Intel(R) 4 Series Express Chipset Family
16	Intel(R) ICH9 Family USB Universal Host Controller - 2937
16	Intel(R) ICH9 Family PCI Express Root Port 1 - 2940
16	PCI standard PCI-to-PCI bridge
16	Intel(R) ICH9 Family PCI Express Root Port 5 – 2948
16	Intel(R) PRO/1000 PM Network Connection
17	PCI standard PCI-to-PCI bridge
18	Intel(R) ICH9 Family USB2 Enhanced Host Controller – 293C
18	PCI standard PCI-to-PCI bridge
18	Intel(R) ICH9 Family USB Universal Host Controller - 2936
19	Intel(R) ICH9 Family USB Universal Host Controller - 2939
19	PCI standard PCI-to-PCI bridge
19	Intel(R) ICH9H Family USB Universal Host Controller – 2935
19	Intel(R) ICH9M/M-E 2 port Serial ATA Storage Controller 1 - 2928
19	Intel(R) ICH9M/M-E 2 port Serial ATA Storage Controller 2 – 292D
20	Intel(R) 82567LM Gigabit Network Connection
21	Intel(R) ICH9 Family USB Universal Host Controller – 2938
22	Microsoft UAA Bus Driver for High Definition Audio
23	Intel(R) ICH9 Family USB Universal Host Controller – 2934
23	Intel(R) ICH9 Family USB2 Enhanced Host Controller – 293A

DMA CHANNELS MAP

Timer Channel	Assignment
Channel 2	Standard floppy disk controller
Channel 4	Direct memory access controller

I/O MAP

I/O MAP	ASSIGNMENT
0x00000000-0x00000CF7	PCI bus
0x00000000-0x00000CF7	Direct memory access controller
0x00000010-0x0000001F	Motherboard resources
0x00000020-0x00000021	Programmable interrupt controller
0x00000022-0x0000003F	Motherboard resources
0x00000040-0x00000043	System timer
0x00000044-0x0000004D	Motherboard resources
0x00000050-0x0000005E	Motherboard resources
0x00000060-0x00000060	Standard 101/102-Key or Microsoft Natural PS/2 Keyboard
0x00000061-0x00000061	System speaker
0x00000062-0x00000063	Motherboard resources
0x00000064-0x00000064	Standard 101/102-Key or Microsoft Natural PS/2 Keyboard
0x00000065-0x0000006F	Motherboard resources
0x00000070-0x00000073	System CMOS/real time clock
0x00000074-0x0000007F	Motherboard resources
0x00000080-0x00000090	Direct memory access controller
0x00000091-0x00000093	Motherboard resources
0x00000094-0x0000009F	Direct memory access controller
0x000000A0-0x000000A1	Programmable interrupt controller
0x000000A2-0x000000BF	Motherboard resources
0x000000C0-0x000000DF	Direct memory access controller
0x000000E0-0x000000EF	Motherboard resources
0x000000F0-0x000000FF	Numeric data processor
0x00000274-0x00000277	ISAPNP Read Data Port
0x00000279-0x00000279	ISAPNP Read Data Port
0x000002E8-0x000002EF	Communications Port (COM4)

I/O MAP	ASSIGNMENT
0x000002F8-0x000002FF	Communications Port (COM2)
0x00000378-0x0000037F	Printer Port (LPT1)
0x000003B0-0x000003BB	Mobile Intel(R) 4 Series Express Chipset Family
0x000003C0-0x000003DF	Mobile Intel(R) 4 Series Express Chipset Family
0x000003E8-0x000003EF	Communications Port (COM3)
0x000003F0-0x000003F5	Standard floppy disk controller
0x000003F7-0x000003F7	Standard floppy disk controller
0x000003F8-0x000003FF	Communications Port (COM1)
0x000004D0-0x000004D1	Motherboard resources
0x00000778-0x0000077B	Printer Port (LPT1)
0x00000880-0x0000088F	Motherboard resources
0x00000A79-0x00000A79	ISAPNP Read Data Port
0x00000D00-0x0000FFFF	PCI bus
0x00004000-0x000040BF	Motherboard resources
0x00005000-0x0000501F	Intel(R) ICH9 Family SMBus Controller – 2930
0x00009000-0x00009FFF	Intel(R) ICH9 Family PCI Express Root Port 5 – 2948
0x00009FE0-0x00009FFF	Intel(R) PRO/1000 PM Network Connection
0x0000B000-0x0000DFFF	Intel(R) ICH9 Family PCI Express Root Port 1 – 2940
0x0000B000-0x0000DFFF	PCI standard PCI-to-PCI bridge
0x0000B000-0x0000DFFF	PCI standard PCI-to-PCI bridge
0x0000C000-0x0000CFFF	PCI standard PCI-to-PCI bridge
0x0000D000-0x0000DFFF	PCI standard PCI-to-PCI bridge
0x0000EB00-0x0000EB0F	Intel(R) ICH9M/M-E 2 port Serial ATA Storage Controller 2 – 292D
0x0000EC00-0x0000EC0F	Intel(R) ICH9M/M-E 2 port Serial ATA Storage Controller 2 – 292D
0x0000ED00-0x0000ED03	Intel(R) ICH9M/M-E 2 port Serial ATA Storage Controller 2 – 292D
0x0000EE00-0x0000EE07	Intel(R) ICH9M/M-E 2 port Serial ATA Storage Controller 2 – 292D

I/O MAP	ASSIGNMENT
0x0000EF00-0x0000EF03	Intel(R) ICH9M/M-E 2 port Serial ATA Storage Controller 2 – 292D
0x0000F000-0x0000F007	Intel(R) ICH9M/M-E 2 port Serial ATA Storage Controller 2 – 292D
0x000F200-0x0000F20F	Intel(R) ICH9M/M-E 2 port Serial ATA Storage Controller 2 – 2928
0x0000F300-0x0000F30F	Intel(R) ICH9M/M-E 2 port Serial ATA Storage Controller 2 – 2928
0x0000F400-0x0000F403	Intel(R) ICH9M/M-E 2 port Serial ATA Storage Controller 2 – 2928
0x0000F500-0x0000F507	Intel(R) ICH9M/M-E 2 port Serial ATA Storage Controller 2 – 2928
0x0000F600-0x0000F603	Intel(R) ICH9M/M-E 2 port Serial ATA Storage Controller 2 – 2928
0x0000F700-0x0000F707	Intel(R) ICH9M/M-E 2 port Serial ATA Storage Controller 2 – 2928
0x0000F800-0x0000F81F	Intel(R) ICH9 Family USB Universal Host Controller - 2936
0x0000F900-0x0000F91F	Intel(R) ICH9 Family USB Universal Host Controller - 2935
0x0000FA00-0x0000FA1F	Intel(R) ICH9 Family USB Universal Host Controller - 2934
0x0000FB00-0x0000FB1F	Intel(R) ICH9 Family USB Universal Host Controller – 2939
0x0000FC00-0x0000FC1F	Intel(R) ICH9 Family USB Universal Host Controller – 2938
0x0000FD00-0x0000FD1F	Intel(R) ICH9 Family USB Universal Host Controller – 2937
0x0000FE00-0x0000FE1F	Intel(R) 82567LM Gigabit Network Connection
0x0000FF00-0x0000FF07	Mobile Intel(R) 4 Series Express Chipset Family

MEMORY MAP

MEMORY MAP	ASSIGNMENT
0xBBD00000-0xFEBFFFFF	PCI bus
0xBBD00000-0xFEBFFFFF	System board
0xFED40000-0xFED44FFF	PCI bus
0xFCC00000-0xFCFFFFFF	Mobile Intel(R) 4 Series Express Chipset Family
0xD0000000-0xDFFFFFFF	Mobile Intel(R) 4 Series Express Chipset Family
0xFEB00000-0xFEBFFFFF	Mobile Intel(R) 4 Series Express Chipset Family
0xFDFC0000-0xFDFDFFFF	Intel(R) 82567LM Gigabit Network Connection
0xFDFFF000-0xFDFFFFFF	Intel(R) 82567LM Gigabit Network Connection
0xFDFFE000-0xFDFFE3FF	Intel(R) ICH9 Family USB2 Enhanced Host Controller - 293C
0xFDFF4000-0xFDFF7FFF	Microsoft UAA Bus Driver for High Definition Audio
0xFD300000-0xFD6FFFFF	Intel(R) ICH9 Family PCI Express Root Port 1 - 2940
0xFD300000-0xFD6FFFFF	PCI standard PCI-to-PCI bridge
0xFD300000-0xFD6FFFFF	PCI standard PCI-to-PCI bridge
0xFDC00000-0xFDEFFFFF	Intel(R) ICH9 Family PCI Express Root Port 1 - 2940
0xFDC00000-0xFDEFFFFF	PCI standard PCI-to-PCI bridge
0xFDC00000-0xFDEFFFFF	PCI standard PCI-to-PCI bridge
0xFD6E0000-0xFD6FFFFF	PCI standard PCI-to-PCI bridge
0xFD500000-0xFD5FFFFF	PCI standard PCI-to-PCI bridge
0xFDE00000-0xFDEFFFFF	PCI standard PCI-to-PCI bridge
0xFD400000-0xFD4FFFFF	PCI standard PCI-to-PCI bridge
0xFDD00000-0xFDDFFFFF	PCI standard PCI-to-PCI bridge
0xFDB00000-0xFDBFFFFF	Intel(R) ICH9 Family PCI Express Root Port 5 - 2948
0xFDA00000-0xFDAFFFFF	Intel(R) ICH9 Family PCI Express Root Port 5 - 2948
0xFDBE0000-0xFDBFFFFF	Intel(R) PRO/1000 PM Network Connection
0xFDFFD000-0xFDFFD3FF	Intel(R) ICH9 Family USB2 Enhanced Host Controller - 293A
0xFED00000-0xFED003FF	High precision event timer
0xFED00000-0xFED003FF	System board
0xFFB80000-0xFFBFFFFF	Intel(R) 82802 Firmware Hub Device
0xFDFFC000-0xFDFFC0FF	Intel(R) ICH9 Family SMBus Controller - 2930
0xE0000000-0xEFFFFFFF	Motherboard resources
0xBBC90000-0xBBCFFFFF	System board
0x0000-0x9FFFF	System board

MEMORY MAP	ASSIGNMENT
0xFEC00000-0xFEC00FFF	System board
0xFED13000-0xFED1FFFF	System board
0xFED20000-0xFED3FFFF	System board
0xFED45000-0xFED9FFFF	System board
0xFEE00000-0xFEE00FFF	System board
0xFFB00000-0xFFB7FFFF	System board
0xFFF00000-0xFFFFFFFF	System board
0xA0000-0xBFFFF	PCI bus
0xA0000-0xBFFFF	Mobile Intel(R) 4 Series Express Chipset Family
0xC0000-0xDFFFF	PCI bus
0xE0000-0xEFFFF	System board
0xF0000-0xFFFFF	System board
0x100000-0xBBC8FFFF	System board